

NASA Range Safety Program 2006 Annual Report

DEVELOPMENT, IMPLEMENTATION, SUPPORT OF RANGE SAFETY POLICY COMMON STANDARDS WORKING GROUP

The Common Standards Working Group is an interagency partnership established to develop, publish, and maintain Air Force and the Federal Aviation Administration, Associate Administrator for Commercial Space Transportation common launch safety requirements and practices to protect the public during launch and re-entry operations.

The charter for the Common Standards Working Group implemented the *Memorandum of Agreement Between the Department of the Air Force and Federal Administration on Safety for Space Transportation and Range Activities* at the direction of the Senior Steering Group. The memorandum, dated 16 January 2001, stated that the AF and the FAA would work together to achieve common safety requirements for launches.

The tangible benefits from the creation of common safety standards include a stable framework of safety requirements for the U.S. space launch industry and minimal administrative burdens for the government and commercial sectors. Another welcome by-product is the creation of a system of checks and balances between the two agencies.

Membership

The working group is a government-only forum. Commercial launch industry representatives are not permitted to participate due to the Department of Transportation policy regarding rulemaking. Membership in the group consists of representatives of the Air Force and Federal Administration Association organizations that are responsible for the development and implementation of launch and re-entry safety requirements, practices, activities, and policies and includes.

- 14th Air Force, Safety, A3
- 30th Space Wing, Safety
- 45th Space Wing, Safety
- Air Force Space Command
- Air Force Systems Command
- Director of National Security, Space Integration, Office of the Under Secretary of the Air Force
- Federal Aviation Administration, Associate Administrator for Commercial Space Transportation
- Headquarters United States Air Force
- Space and Missile Center

NASA, the National Reconnaissance Office, and the Missile Defense Agency are also current members of the group.

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Senior Steering Group

The Senior Steering Group provides senior executive leadership and guidance to the Common Standards Working Group to accomplish its objectives. The Senior Steering Group meets semi-annually, or more frequently as needed, and is co-chaired by the following:

- The Federal Aviation Administration Associate Administrator for Commercial Space Transportation
- The Director of National Security Space Integration, Headquarters United States Air Force
- The Director of Space Operations and Integration, Headquarters United States Air Force
- The Director of Air and Space Operations, Headquarters Air Force Space Command

Past Accomplishments

The Common Standards Working Group has made significant progress since its inception, drafting and publishing the *Range Safety User Requirements Manual* (AFSPCMAN 91-710) in July 2004. Additionally, the Federal Aviation Administration issued its first *Notice of Proposed Rulemaking* in October 2000. It then issued a supplemental notice in July 2002 and published and posted its second supplemental notice in 2003. In conjunction with the new rule, the Common Standards Working Group also developed a Launch Safety Site Assessment and a Memorandum of Understanding between the FAA and the Air Force for resolving requests for relief from common launch safety requirements.

Also, in 2003, the working group agreed on a framework for determining probabilities of failure for new expendable launch vehicles. The group established a list of factors that are requirements and practices used by the Federal Aviation Administration and the Air Force to protect public safety during launch and re-entry. The Federal Aviation Administration requirements have been codified in 14 Code of Federal Regulations, Chapter III.

At Air Force Space Command ranges, the common safety standards are implemented through Air Force Space Command Range Safety documents. Since the vehicles in question were new with little existing empirical data, it was determined that initial evaluations would be conducted based in part on data from vehicles developed and launched under similar circumstances. An independent assessment of the proposed requirements and methods was conducted, and the Common Standards Working Group published the final guidelines in 2004.

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Current Projects

The Common Standards Working Group and its committee are currently working on the following projects.

AFSPCMAN 91-711. Recently, the Common Standards Working Group developed AFSPCMAN 91-711, *Launch Safety Requirements for Air Force Space Command Organizations*. This document is scheduled for publication in 2006. The manual describes the Launch Safety (formerly known as Range Safety) authorities, responsibilities, and functions of organizations internal to Air Force Space Command, including defining and implementing the Launch Safety Program policy and responsibilities for Space Command ranges.

AFSPCMAN 91-712. Headquarters Air Force Space Command Safety made a decision to revise and combine the computer and software requirements for Range Users (currently in AFSPCMAN 91-710) and the computer and software requirements for Range Operators and Acquirers into a single document. These requirements will be published as AFSPCMAN 91-712, *Range Software Requirements*. Space Command convened the Common Standards Working Group to develop and coordinate these requirements. The draft computer and software requirements were sent to industry, Range Users (including NASA), and Range Operators and Acquirers for review and comment. This document is scheduled for publication in 2007.

Reusable Launch Vehicles. The Reusable Launch Vehicle (RLV) Working Group was formed in April 2006 to develop public safety requirements for the launch and recovery of reusable launch vehicles. Membership includes the Air Force and Federal Aviation Administration, with participation from NASA. The group was formed for the following reasons:

- When AFSPCMAN 91-710, *Range Safety User Requirements*, was released in July 2004, reusable launch vehicle requirements had not been adequately addressed.
- When the potential for reusable launch vehicle users on Air Force Space Command ranges increased, Air Force and Federal Aviation Administration leadership expressed their desire that reusable launch vehicle safety requirements be developed expeditiously to aid potential users in their design efforts.
- The flight of Spaceship One showed that entrepreneurs developing reusable launch vehicles is becoming a reality.
- The Space Shuttle Columbia accident revealed that safety concerns for the public during launch vehicle reentry needed to be addressed in more detail.

The Reusable Launch Vehicle Working Group meets weekly via teleconferences and has initiated development of public safety requirements for unmanned reusable launch vehicles. This effort was scheduled for completion in October 2006, and development of safety requirements for manned reusable launch vehicles begins in November 2006. The goal is to have a full set of public safety requirements for reusable launch vehicles

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developed by early 2007 for incorporation into AFSPCMAN 91-710 and Federal Aviation Administration's Reusable Launch Vehicle Public Rule. The figure below shows the evolution of the major safety documents from EWR 127-1 to the 91 document series.

NASA Range Safety has been an integral part of the Common Standards Working Group since 2004. As new and emerging space launch technologies surface, the group will continue to provide a forum through which the Air Force, the Federal Aviation Administration, NASA, and other government agencies can communicate on further development and implementation of common range safety standards. The goal of this group has been, and will always be, to maintain public safety in all phases of launch activities.